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Comparison of Two Exercise Plans for Women

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Rampage is moderately resistant to most diseases common to the Midwest, but is not resistant to phytophthora root rot. Rampage has good seedling emergence and resistance similar to Chippewa 64 and Wirth for chlorosis due to iron deficiency. Rampage has purple flowers, brown pubescence, brown pods, shiny yellow seed with a black seed scar (hilum).

The seed of Rampage increased by participating states in 1969 had 2.5 percent off-type hila, principally grey hila. Certification standards

for varietal mixture will take into account these off-type seed to prevent undue rejection of seed lots from certified growers. Purification of the variety is in progress.

Distribution of Seed

Rampage will be best suited to areas where Hark is currently grown. In Iowa, the area includes the northern three tiers of counties. Corsoy yields better than Rampage in Iowa which limits Rampage's usefulness to the northernmost part of the state.

Seed of Rampage has been distributed to foundation seed organizations in Illinois, Indiana, Iowa, Minnesota, Ohio, South Dakota, and Wisconsin. In Iowa, seed will be distributed to qualified certified seed growers for planting in 1970. Iowa growers eligible for an allotment of seed are determined on the basis of their records in soybean certification, and seed is distributed by the Committee for Agricultural Development. Rampage will be available for general farm planting in 1971.

Comparison of two EXERCISE PLANS for Women

by Rita Carey

IT'S CURRENTLY "in" to be physically fit. In Iowa and across the nation, adults and youth are participating in jogging, bicycling and other exercise programs designed to improve and maintain health.

Historically, conditioning programs, games, sports and dance have gained popularity as a result of Presidential proclamations. Theodore Roosevelt, Dwight Eisenhower, John Kennedy, Lyndon Johnson and Richard Nixon have all worked to stimulate interest in physical fitness. Initially their concern was for the youth of America. Presidential endorsements were prompted by interest in military security, and poor results on physical fitness tests by youths and others.

Recently, however, public concern for physical fitness is becoming popular because of our increasing awareness that the relatively inactive American way of life contributes to degenerative diseases, overweight, hypertension, emotional problems, insomnia and general discontent.

Existing medical knowledge shows that people suffering from many of these ailments benefit from regular and sufficiently vigorous physical exercise. Proper exercise improves the functioning of the heart and lungs, tones muscles and aids in weight control. Exercise also lessens the emotional tensions built up in daily living, helping us relax and cope more easily with the stresses of life. Studies show that physically fit adults generally have fewer emotional upsets and more resistance to physical ailments. They also have a more healthful zest for living than relatively unfit adults.

Many of us would benefit from a conditioning program since our work and leisure activities are not vigorous enough to develop and maintain an adequate level of physical fitness.

A good conditioning program meets the following requirements:

1. It is adapted to an individual's exercise tolerance. You need to determine your current level of fitness and progress from there. An exercise program should not cause extreme muscle soreness or prolonged fatigue.

2. It places more stress on all your organic systems than they normally receive in daily use. As you exert yourself more and more strenuously all exercise becomes easier and you're able to do more vigorous tasks. You need exercise that not only tones muscles, but also makes your heart and lungs work harder than usual. Many authorities on physical fitness consider the ability of the cardiorespiratory system to adapt to stress as the most significant aspect of physical fitness.

3. It is progressively more demanding. This will bring you from your present level of fitness to a higher level without undue strain.

4. It extends the psychological limits of the participant. Or, put another way, it lessens the fears of exercise for people who have no physical reason to be anxious. For example, a man who is not physically fit might not play an active game with his children because he fears a heart attack. With a good conditioning program he would have more knowledge of his limits and capabilities. Then his decision of whether or not to play would be based on more than a "feeling" that he might be hurt.

5. It is enjoyable and increases your desire for exercise. If you enjoy an exercise program you will stick to it longer.

Two popular conditioning programs which meet these five requirements are the Royal Canadian Air Force XBx Physical Fitness Plan and the Aerobic Exercise Plan. Both are effective conditioning programs. However, they appear to emphasize different components of fitness.

The Aerobics Plan emphasizes exercise like swimming, running, bicycling and playing tennis—exercise that conditions the heart, lungs and blood vessels. The XBx Plan uses calisthenics, which mainly strengthen and tone muscles.

The different emphases of the two programs suggest results might be different also. A study was conducted in the ISU department of physical education for women to compare the effects of the two plans on three measures of physical fitness: grip strength, exercise and recovery pulse rate, and selected skinfold and girth measurements of women.

Grip strength measurement is often used as a general indicator of overall muscular fitness. The strength in your hands indicates the strength and fitness of other muscles in your body. This component was



JOGGING is an aerobic exercise — it conditions your heart, lungs and blood vessels as well as adding to overall fitness. This conditioning can also be achieved from other active exercise like hiking, swimming, bicycling, or playing tennis and handball. Many authorities consider the ability of the cardiorespiratory system to adapt to stress as the most significant aspect of fitness.

tested to see if women on the XBx Plan improved more than women on the Aerobics Plan in overall muscular fitness, since the XBx Plan emphasizes strengthening and toning of muscles.

Pulse rate was measured standing, during strenuous exercise, and at various recovery intervals from 1 to 10 minutes. As you become more physically fit and your cardiorespiratory system becomes more efficient, your heart rate decreases. Conditioning the heart, lungs and blood vessels was emphasized in the Aerobics Plan, rather than the strengthening of muscles.

Selected skinfold measurements and girth measurements of the upper arm and waist were used to compare the effects of the two plans. The skinfold test uses an instrument which measures a pinch of skin and determines the percentage of body fat compared to all other body tissue. Excess fatty tissue is harmful because of the extra stress placed on every system of the body. A decrease in skinfold thickness is more significant than measurement of weight loss. A decrease in skinfold measures actual loss of fat. You can use a pinch of skin to test for excess fatness. If you firmly hold a pinch of skin just below your lowest rib and find it is an inch or more thick, you are likely to have excess fatty tissue.

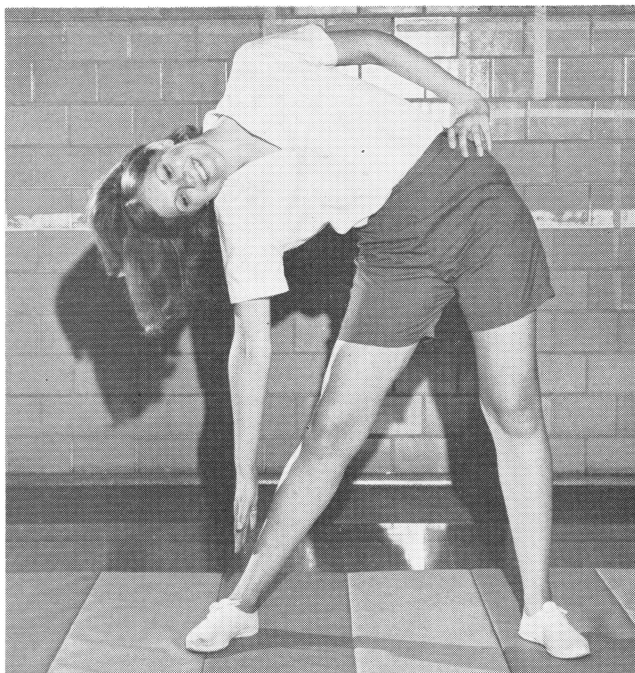
Eighteen college women volunteers, not enrolled

in a physical education activity course, participated in the study. The women were assigned to a control group or one of two exercise groups.

The control group followed no conditioning program and members were asked not to vary their activity routine during the study. One exercise group used the conditioning plan outlined by Kenneth Cooper in his book, *Aerobics*. The other exercise group followed the XBX Plan for Women outlined in *The Royal Canadian Air Force Plans for Physical Fitness*. Both exercise groups were supervised while participating in the experimental programs.

All the subjects were tested to determine the level of physical fitness before the study, after 3 weeks and after 6 weeks. Women in neither exercise group appeared to gain muscular strength from the programs, as measured by grip strength tests. Grip strength is a general index of overall muscular fitness and does not evaluate the strength of the specific muscle groups exercised by the Aerobic or XBX Plan. A more definitive measuring technique might have shown differences.

Both experimental groups improved their level of cardiorespiratory fitness over the 6 weeks of conditioning and the control group made no improvement. Women in the Aerobic group consistently improved their cardiorespiratory efficiency more than women in the XBX Plan. None of the differences in condi-



THIS SIDE-BENDING exercise is a good one for limbering up if you have been physically inactive. Start gradually when beginning an exercise program. Too much enthusiasm will result in unnecessarily sore muscles and undue fatigue. Both the Aerobic and XBX Plan were developed to take you from your present level of fitness through progressively harder steps to higher levels of fitness.



PULSE RATES standing, during exercise and after recovery intervals were measured with a physiograph. A photoelectric cell attached to the finger transmits pulse rate. As you become physically fit and your cardiorespiratory system becomes more efficient, your pulse rate decreases. In this study comparing two exercise plans, women following the Aerobic plan consistently improved their cardiorespiratory efficiency more than the women in the XBX group. The control group made no improvement in fitness.

tioning effects was large enough to be statistically significant except those occurring in the third minute after exercise. At this interval the average pulse rates of women in the XBX Plan decreased 6.33 beats per minute, while average pulse rates of women in the Aerobic Plan decreased 14.17 beats per minute. These results indicate that the Aerobic Plan is superior to the XBX Plan in conditioning the heart, lungs and blood vessels.

There were no significant differences in skinfold and girth measurements of women in either group. Loss of excess fatty tissue through exercise alone is a slow process and this study was held for only 6 weeks. A study held for a longer period of time might show more significant differences. Differences would appear more quickly if the participants also restricted their diets while on the exercise program.

Either exercise plan will help you achieve and maintain a higher level of physical fitness. You must decide your own exercise needs and choose a plan accordingly. Remember that the XBX Plan emphasizes strength and muscle tone while the Aerobic Plan emphasizes cardiorespiratory fitness. Perhaps a combination of the two plans would be best for you. With improved fitness you lessen your chances of suffering from degenerative diseases, enhance your mental health, and improve your appearance. Conditioning programs such as these can be stepping stones to learning and enjoying recreational games, sports and dance. As you become more physically fit, you increase the likelihood of a longer and richer life.